

METHOD AND APPARATUS FOR CONTINUOUS AMPLIFICATION OF DNA

Abstract of Disclosure

Continuous DNA-amplification method and apparatus. Reaction mixture containing reagent solution and DNA fragments serving as templates is continuously temperature-processed by heat-exchange fluids whose temperatures differ, enabling successive DNA amplification reactions to be carried out efficaciously in large volume. Apparatus has a reaction-mixture tank, isothermal denaturing, annealing and elongation tanks, a recirculation path that circuits the isothermal tanks, and a pump that works to feed reaction mixture within the recirculation path unidirectionally through it. The reaction mixture, transferred from tank to tank by the pump, is maintained at prescribed reaction temperatures in the isothermal tanks. Heat-exchange efficiency is improved compared with batch systems, and the reaction mixture--uniformly, swiftly put into prescribed temperature states--can be amplification-reacted under ideal conditions, enabling quantum improvement in the amplification efficiency. Amplification reactions are carried out by circuit-feeding the reaction mixture, which serves to establish per-cycle DNA amplification quantity at large volumes.

